REMARKS

Claims 1, 3, 4, 5, 7 and 8 are pending in the application. Claim 5 was rejected under 35 U.S.C. § 102(e) as described in paragraph 2 of the Office Action. Claim 1 was rejected under 35 U.S.C. § 103 as described in paragraph 4 of the Office Action. Claims 2-4 and 6-8 were rejected under 35 U.S.C. § 103 as described in paragraph 5 of the Office Action. Claims 1 and 5 are the only independent claims.

Claim 1 has been amended to include the limitations of claim 2, whereas claim 5 has been amended to include the limitations of claim 6. Accordingly, the amendments do not raise new issues that would require further consideration and/or search. Therefore, Applicant requests that the amendments to the claims be entered.

Claims 1, 3, 4, 5, 7 and 8 are patentable over the prior art of record for the following reasons.

In accordance with an exemplary embodiment of the present invention, an inputted MPEG transport stream is stored in the buffer 120. The data flow controller 130 then transfers packets of the MPEG transport stream stored in the buffer 120 to separate buffers on the basis of conditions set by the decoding controller 180 (step S207 in paragraph [0030]). At this point, the data flow controller 130 sequentially reads the packets from the buffer 120, and specifies separate buffers 14i (for example, i= 1 to 3) as destinations in accordance with the set conditions (step S305 in paragraph [0032]). If the header of a read packet is "Header 1," for example, the separate buffer 141 is specified as a destination of the packet (paragraph [0032]). Separate decoders then read data from their corresponding separate buffers, and decode the read data.

Two effects are achieved by using a plurality of decoders for decoding in accordance with the present invention. One, if the decoding load is significant, packets in the MPEG transport stream are distributed among the decoders, thereby spreading the decoding load. Two, the occurrence of delays during decoding are reduced as compared to a case where only one decoder is used.

In amended claims 1 and 5, the above-described process is carried out to allow a plurality of video or audio data contained in one MPEG transport stream to be concurrently decoded. Each of amended independent claims 1 and 5 recite a feature corresponding to an operation that occurs in the case where the buffer 120 has an overflow as discussed below.

Independent claim 1, as amended, recites *inter alia*:

> wherein said buffer manager outputs, when said buffer becomes full of the data, an overflow notification to said reproduction controller,
>
> wherein said reproduction controller outputs, upon receipt of said overflow notification, an instruction to stop the data extraction to said data extractor, and outputs an initialization instruction to said decoding controller,
>
> wherein said decoding controller outputs, upon receipt of the initialization instruction from said reproduction controller, an instruction to initialize all said plurality of separate buffers to said separate buffer manager, outputs to said buffer manager an instruction to initialize said buffer, and respectively outputs instructions to stop the decoding to all said plurality of decoders,
>
> wherein said buffer manager initializes said buffer in accordance with the initialization instruction from said decoding controller,
>
> wherein said separate buffer manager initializes all said plurality of separate buffers in accordance with the initialization instruction from said decoding controller, and
>
> all the processing which is stopped is resumed after all said buffer and said plurality of separate buffers are initialized.

Independent claim 5, as amended, recites inter alia:

> wherein, when said buffer becomes full of the data:
> stopping extraction and decoding of the data;
>
> initializing all said buffer and said plurality of separate buffers; and
>
> resuming all the processing which is stopped after all said buffer and said plurality of separate buffers are initialized.

It is submitted that the prior art of record, either singly or in combination, fails to disclose or suggest the above-identified limitations.

The object of Kawakami differs from the object of the present invention. Specifically, Kawakami sequentially reproduces information materials without causing a time lag, whereas the present invention simultaneously decodes a plurality of pieces of data.

Paragraph 4 of the Office Action asserts that Kawakami discloses substantially the same multiple decoding apparatus as claimed in claim 1. This assertion is incorrect because Kawakami decodes data using a decoder in a one-to-one correspondence with the data as discussed in more detail below.

In Kawakami, an information material supplied from an MPEG encoder 12 shown in FIG. 1 is divided into cells (4 bytes each), and stored into HDDs 20-1 through 20-5 (col. 5, 1. 66 through col. 6, 1. 3). In Kawakami, the information material is stored in such a manner that the head cell is stored in the HDD 20-1, the next cell is stored in the HDD 20-2, and so on (col. 6, 11. 3-7; FIG. 11).

Kawakami discloses reproducing information materials as follows. The HDDs 20-1 through 20-5 load information materials 14 stored therein onto corresponding DMA buffers 30. A CPU group 36 sets a time-divisional multiplexing controller 40 so as to start reproduction on a specified channel (col. 12, 11. 3-5). The time-divisional multiplexing controller 40 sequentially reads the information materials 14 from the DMA buffers 30, and the read information materials 14 are stored into a decoder buffer 34 corresponding to a predetermined decoder 22 (col. 5, 11. 40-42). As a result, the information materials 14 are restored to a piece of data. Each decoder 22 decodes the information materials 14 read from a corresponding decode buffer 34 (col. 5, 11. 42-44). Kawakami further discloses "a plurality of channels corresponding to the number of decoders 22" (col. 5, 11. 58-60). Accordingly, a specified channel corresponds to one specific decoder.

In Kawakami, the time-divisional multiplexing controller 40 sequentially reads divided and stored information materials, and restores the read information materials to a piece of data so as to be decoded **by one decoder**. In contrast, as recited in amended claims 1 and 5, one MPEG transport stream is divided into packets to be distributed to and decoded by a plurality of decoders. Accordingly, the decoding as recited in amended claims 1 and 5 differs from the decoding disclosed in Kawakami. Specifically, Kawakami does not disclose that data is divided into portions which are transmitted to their corresponding decoders.

In light of the above discussion, it is clear that Kawakami fails to disclose a decoding controller as recited in independent claim 1 or respectively decoding as recited in independent claim 5.

Siong et al. (Siong) fails to disclose or suggest the shortcomings of Kawakami such that a combination of Kawakami in view of Siong would disclose or suggest that which is recited in amended independent claims 1 and 5.

In Siong, a header detection unit 2 compares a header provided by a micro-controller 6 with inputted MPEG stream packets, and feeds the packets to corresponding decode units 3-5 (FIG. 1). The decode units 3-5 each includes a buffer 13 for storing packets, and a decoder 14 for decoding the packets (FIG. 2).

In the present invention, the data extractor 110 extracts data which coincides with set conditions from input data, and the extracted data is stored in the buffer 120. The data flow controller 130 then distributes the data in the buffer 120 among the separate buffers 141. The decoders 15i respectively decode data stored in the separate buffers 14i.

In light of the above discussion, it is clear that Siong fails to disclose or suggest a data extractor as recited in independent claim 1 or extracting the two or more data to be decoded and reproduced as recited in independent claim 5.

Furthermore, as discussed above, independent claims 1 and 5 have been amended to include the limitations of original claims 2 and 6, respectively. As discussed on page 5 of the Office Action, a combination of Kawakami in view of Siong fails to disclose or suggest that which is recited in original claims 2 and 6. Accordingly, it is clear that for this additional reason, a combination of Kawakami in view of Siong fails to disclose or suggest the subject matter recited in amended independent claims 1 and 5.

Haskell et al. (Haskell) fails to disclose or suggest the shortcomings of the combination of Kawakami and Siong such that a combination of Kawakami, Siong and Haskell would disclose or suggest that which is recited in amended independent claims 1 and 5.

The Office Action asserts that Haskell teaches, at col. 16, 11. 27-39, the particular termination of packets of data within the decoder as one way of preventing overflow in the buffers, thereby stopping decoding to the decoder, data extraction, data transfer to the specific buffer, and discarding data directed toward the specific buffer, as recited in original claims 2-4.

However, Haskell merely discloses, at col. 16, 11. 27-39, that a packet could be terminated in order to prevent decoder overflow.

Thus, unlike amended claims 1 and 5, Haskell fails to disclose or suggest stopping decoding to the decoder, data extraction, and data transfer to the specific buffer, and discarding data directed toward the specific buffer.

In each of amended independent claims 1 and 5, the decoding of the decoder is stopped in response to an overflow notification. If the decoding to the decoder is not stopped when the overflow notification is received, video data, audio data, etc., might be decoded into an imperfect form (due to data loss, an error, etc.). Data decoded into an imperfect form (hereinafter, referred to as "imperfect data") might cause various adverse influences to a device which receives and processes the imperfect data. The multiple decoding apparatus of the present invention does not generate the imperfect data, whereby it is possible to prevent any adverse influence of the imperfect data.

However, Haskell et al. does not teach any effect achieved by stopping the decoding of the decoder.

Paragraph 5 of the Office Action indicates that it is considered obvious that after the buffer and the separate buffers are initialized in response to the overflow notification, stopped processing is resumed and the discard of data is released as claimed in original claims 2-4. In original claims 2-4, data directed toward the buffer is discarded in response to the overflow notification. If the data directed toward the buffer is not discarded when the overflow notification is provided, the data, which was supposed to be discarded, is stored in the buffer. In the case where the data (which was supposed to be discarded) is video data and real-time video can be displayed by discarding the data (which was supposed to be discarded) the real-time nature of the video is destroyed by storing the data (which was supposed to be discarded). On the other hand, the multiple decoding apparatus of the present application discards data directed toward the buffer, therefore the real-time nature of the data is not destroyed. Specifically, amended claim 1 recites that the reproduction controller outputs an initialization instruction to the decoding controller wherein the decoding controller outputs an instruction to initialize all of the plurality of separate buffers to the separate buffer manager, outputs to the buffer manager an instruction to initialize the buffer, and respectfully outputs instructions to stop the decoding to all

the plurality of decoders. Similarly, amended claim 5 recites that when the buffer becomes full of the data, the method further comprises stopping extraction of the decoding data and initializing all of said buffer and plurality of separate buffers. Haskell describes, at col. 16, 11. 27-39, that a packet could be terminated in order to prevent decoder overflow, **but is silent as to the buffer initialization**.

Therefore, it is clear that Haskell fails to disclose or suggest the buffer initialization feature as recited in amended independent claims 1 and 5.

Because neither Kawakami, Siong nor Haskell disclose or suggest the buffer initialization feature as recited in amended independent claims 1 and 5, it is submitted that a combination of the teachings of Kawakami, Siong and Haskell additionally fails to disclose or suggest that which is recited in each of independent claims 1 and 5. Furthermore, in light of the distinctions between amended claims 1 and 5 as discussed above and the cited prior art, it is submitted that one of ordinary skill in the art at the time of the invention would not have been motivated to modify the cited prior art to arrive at that which is recited in each of amended independent claims 1 and 5.

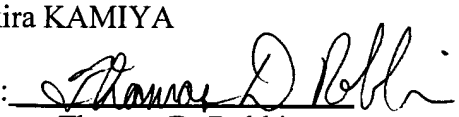
Consequently, independent claims 1 and 5, and dependent claims 3, 4, 7 and 8 are patentable over the prior art of record within the meaning of 35 U.S.C. § 103.

Having fully and completely responded to the Office Action, Applicant submits that all of the claims are now in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicant's attorney at the telephone number shown below.

Respectfully submitted,

Akira KAMIYA

By: 

Thomas D. Robbins
Registration No. 43,369
Attorney for Applicant

TDR/abm
Washington, D.C. 20006-1021
Telephone (202) 721-8200